

lighting unit through the center hole, and a plurality of transparent body surfaces each having a reflective layer so as to reflect and return light into the transparent body.

Claim 2, line 1, after "wherein" delete "the opening" and insert --a space--.

## **REMARKS**

### **Brief Summary of the Office Action**

The Office Action of April 15, 1999, has been received and reviewed. In the outstanding Office Action, claims 2, 3 and 7-13 were rejected under 35 U.S.C. § 112, second paragraph. Claims 1, 3, 5 and 11 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,278,740 to Madansky. Claims 1, 3, 4 and 9 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,764,391 to Smith. Claims 2, 6, 7 and 10-13 have been rejected under 35 U.S.C. § 103 (a) as being unpatentable over Madansky in view of U.S. Patent No. 3,409,770 to Clapham, Jr., with claim 8 being considered unpatentable over this combination further in view of U.S. Patent No. 4,991,064 to Clem.

### **Brief Summary of the Amendment**

Claims 1 and 2 have been amended. Claims 3, 7, 9, 11 and 13 have been canceled. Currently, claims 1, 2, 4-6, 8, 10 and 12 are pending. Reconsideration of the application as amended is requested.

### **Rejections Under 35 U.S.C. §112**

Claims 2, 3 and 7-13 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, in claim 2, the phrase "the opening" lacked antecedent basis. This phrase has been deleted and the phrase "a space" inserted. This amendment eliminates any indefiniteness that may have existed in claim 2. The rejection of claims 3 and 7, and the claims dependent therefrom, is moot in view of the cancellation of claims 3 and 7. For the above

discussed reasons, applicant submits that claims 1, 2, 4-6, 8, 10 and 12 are definite. As a result, the rejection 35 U.S.C. § 112, second paragraph, should be withdrawn.

### **Rejections Based on Prior Art**

#### **The Present Invention**

The present invention relates to a lighting unit comprising a ring-shaped transparent body for light diffusion having a center hole open between its first and second ends, and a light-emission surface surrounding the center hole and evenly emitting light projected from a plurality of illuminants. The lighting unit enables both even surface emission of light and reduction of unevenness in light intensity on a surface of a product to be examined.

In accordance with the present invention, light emitted by the illuminants is projected into the transparent body, and is reflected and scattered in a complex manner while it is transmitted through the transparent body and uniformly emitted from the light-emission surface of the transparent body at an even intensity. The lighting unit is suitable for examination of a product by means of reflected light. In particular, since the transparent body is in the shape of ring having a center hole, actions such as visual inspection and the taking of photographs can be performed on a product to be examined through the center hole. Also, the light-emission surface emits light that is more even in intensity than a light-emission surface having no center hole. Therefore, light intensity on a surface of a product to be examined becomes constant and even, the illuminants are not reflected on the surface of the product, and there arises a reduction in failing to detect a micro flaw or a finishing defect on the surface of the product.

#### **Rejections under § 102**

Claims 1, 3, 5 and 11 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,278,740 to Madansky. Madansky discloses a device for illuminating an

instrument dial 14, such as the face of a clock. The illuminated dial 14 is positioned on top of a transparent base member 10 and over the opening of a disk-like aperture 10a defined by a transparent, annular wall 11. Oval cavities 24 are spaced around the circumference of the disk-like aperture 10a. Each oval cavity 24 houses a small light bulb 25 that illuminates part of the member 10 and the instrument dial 14. As seen in Figs. 2-6 of Madansky, a glass plate 16 is positioned within the disk-like aperture 10a below the dial 14 and between the front and rear faces 12a, 12b of the member 10. The dial 14 is illuminated either directly from the light passing through the annular wall 11 or as a result of the light reflecting off the glass plate 16 and at a high angle of incidence to the vertical on the inner surface of the glass plate 16.

Claim 1 recites a lighting unit including a ring shaped transparent body having a light-emission surface for illuminating a surface of a product to be examined when the product is located at the under side of the lighting unit. The lighting unit also includes a center hole open between its first and second ends. As a result, actions such as visually inspecting or taking photographs of the surface of the product to be examined from an upper side of the lighting unit can be performed through the center hole.

Anticipation can only be established by a single prior art reference which discloses each and every element of the claimed invention. (RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d. 1440, 1444, 221 USPO 385, 388 (Fed Cir 1984)). Madansky does not disclose a light source including a center hole that is open between its first and second ends (the front and rear faces 12a, 12b of the member 10). As can be seen in the figures of Madansky, the glass plate 16 extends across and closes the disk-like aperture 10a between its ends. Additionally, the upper opening of the aperture 10a is closed by the dial 14. Because Madansky does not include a center hole open between its ends, it cannot disclose a lighting unit that illuminates a surface of a

product so that it can be visually or photographically inspected from the upper side of the lighting unit through an open center hole. As a result, Madansky does not disclose each and every element of the light source as recited in the claims. Therefore, claims 1, 3, 5 and 11 are not anticipated by Madansky and the rejection should be withdrawn. Moreover, applicant submits that nothing in the prior art would have motivated one of ordinary skill in the art to modify Madansky to arrive at the lighting device recited in claim 1 for such a modification would destroy the express teachings of this reference.

Claims 1, 3, 4 and 9 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,764,391 to Smith. Like Madansky, the device disclosed in Smith does not relate to a light source for positioning above a product in order to visually inspect or take pictures of a surface of a product. Instead, Smith discloses a holographic display device for radio consoles and instrument panel displays having a rotating knob. The device of Smith includes a circular light pipe 11 having a front surface 11a, a rear surface 11b and an input surface 11c. The light pipe 11 includes a central opening through which a rotatable shaft 12 extends. As shown in the figures of Smith, the central opening 11 is closed between its ends by the included rotatable shaft 12. Moreover, the central opening of Smith does not allow a surface beneath the illuminating device to be visually or photographically inspected. Therefore, Smith does not anticipate claim 1, and the rejection of claims 1, 3, 4 and 9 should be withdrawn. Moreover, there is nothing in the prior art that would have motivated one of ordinary skill in the art to modify Smith to arrive at the lighting device recited in claim 1.

#### Rejections under § 103

Claims 2, 6, 7 and 10-13 have been rejected under 35 U.S.C. §103 (a) as being unpatentable over Madansky in view of U.S. Patent No. 3,409,770 to Clapham, Jr. Madansky

and Clapham both disclose illuminating devices. However, neither discloses an illuminating device as recited in claim 1. Like Madansky, Clapham fails to disclose a lighting unit having a central hole that is open between its first and second ends so that a surface of a product beneath the lighting unit can be visually or photographically inspected from an upper side of the lighting unit.

Clapham is relied upon in the Office Action for teaching the use of a silicone material for positioning a lighting source. The Office Action suggests that it would have been obvious to modify the illuminating device of Madansky with the silicone disclosed by Clapham in order to position a light source relative to a light introduction surface.

However, even if motivation existed to modify Madansky with Clapham as suggested in the Office Action, the resulting combination would not arrive at the claimed invention. Neither Madansky nor Clapham discloses a center hole that is open between its two ends for visually inspecting or taking pictures of the product located at an under side of the lighting unit. Therefore, the rejection should be withdrawn.

Claim 8 has been rejected under 35 U.S.C. §103 (a) as being unpatentable over Madansky in view of Clapham, Jr., and further in view of U.S. Patent No. 4,991,064 to Clem. Clem is relied upon to teach the use of an edge-lit transparent body having a ring-shaped planar light-emission surface for emitting light toward an instrument panel. Like Madansky, Clem relates to a device for illuminating the graphics of an instrument panel. Clem does not discuss or contemplate illuminating and inspecting the surface of a product. Additionally, the illuminating device of Clem does not include a center hole that is open between its first and second ends for visually inspecting or taking pictures of the product located at an under side of the lighting unit. Therefore, even if motivation existed for the modification suggested in the Office Action, the

resulting combination would not arrive at the claimed invention for Clem does not teach what Madansky and Clapham lack. The resulting combination would not teach a lighting unit including a center hole that is open between its two ends for visually inspecting or taking pictures from an upper side of the lighting unit of a product located at an under side of the lighting unit.

### **Conclusion**

Therefore, for the reasons discussed above, applicant submits that claims 1, 2, 4-6, 8, 10 and 12 are in condition for allowance. A notice to this effect is earnestly solicited. If the examiner has any questions, it is requested that he phone the undersigned at (202) 508-9100. No fees are believed needed. However, in the event that any fees for filing this amendment are required, please charge them to Deposit Account No. 19-0733.

BANNER & WITCOFF, LTD.  
1001 G Street, N.W. - 11th Floor  
Washington, D.C. 20001  
Telephone: 202-508-9100  
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Respectfully submitted,

By: Brian E. Hanlon  
Brian E. Hanlon  
Registration No. 40,449